Table of Contents

1 THE HANDLING PROCESS	14	
1.1. Handling – a Useless Process 1.2. The Development of Handling Technology 1.3. What Drives Automation in Handling Technology? 1.4. Handling and Production Technology Terminology	27 30	
2 GRIPPERS – THE "APP" FOR ROBOTS	46	
2.1. The Historical Development of Gripping Technology 2.2. The History of Robotics 2.3. Robots are Capturing the Markets	60	
3 GETTING A GRASP OF GRIPPERS 88		i
3.1. The Workpiece as a Starting Point 3.2. Gripper Fingers as Operating Elements 3.3. Gripper Hands 3.4. Transferring Forces 3.5. Gripping Ranges 3.6. Gripping Times 3.7. Gripping Situations 3.8. Grippers as a Source of Information 3.9. Gripper Selection 3.10. Gripping and Safety	115 142 148 171 174 180 199 218	
4 MOVEMENT ADDS VALUE	242	
4.1. The Impact of Movement 4.2. Making Movement Possible 4.3. Layout 4.4. Processing Workpieces	271 309	
5THE FUTURE OF GRIPPING AND HANDLING TECHNOLOGY	318	